

CLAIMS

1. A bottom bracket assembly for a bicycle comprising a spindle that is rotatably held in an outer bracket portion with at least two cartridge bearings, each including outer and inner races, where:

the inner races of said cartridge bearings are fit onto said spindle and the outer races of said cartridge bearings are fit into said outer bracket portion;

said inner races are fixed on said spindle in both axial directions by abutting inner and outer stop elements;

at least one of said outer races is mounted in said outer bracket portion such that it is free to move in both axial directions.
2. The bottom bracket of claim 1 in which at least one step is provided on the spindle as an inner stop element.
3. The bottom bracket of claim 1 in which stop rings are provided as outer stop elements.
4. The bottom bracket of claim 1 in which said outer bracket portion consists of at least one adapter and a cylindrical sleeve, wherein said adapter and/or said sleeve provide shoulders to limit axial movement of said outer bearing races, and where gaps are provided between the axial end surfaces of said outer race and said shoulders that allow the outer races to move axially.

5. A bottom bracket assembly for a bicycle comprising a spindle rotatably held in an outer bracket portion with at least two cartridge bearings each including outer and inner races, where:
 - the inner races of said cartridge bearings are fit onto said spindle and the outer races are fit into said outer bracket portion;
 - said inner races are fixed in both axial directions by abutting inner and outer stop elements provided on said spindle;
 - the ends of said spindle comprise adapting portions to receive crank arms such that said crank arms abut against the outer stop elements in an axial direction.
6. The bottom bracket of claim 5 in which at least one step is provided on the spindle as an inner stop element.
7. The bottom bracket of claim 5 in which stop rings are provided as outer stop elements.
8. The bottom bracket of claim 5 in which said adapting portions includes threads for fixing said crank arms to said spindle.
9. The bottom bracket of claim 5 in which adjacent to at least one of the outer races, in

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both axial directions, there are gaps provided such that the outer race is free to move in both axial directions.

10. The bottom bracket of claim 9 in which both outer races are free to move in both axial directions.

11. A bottom bracket assembly for a bicycle comprising a spindle rotatably held in an outer bracket portion by at least two cartridge bearings, each including inner and outer races, where:

the inner races of said cartridge bearings are fit onto said spindle and the outer races of said cartridge bearings are fit into said outer bracket portion;

at least one of said outer races is mounted in said outer bracket portion such that it is free to move in both axial directions;

said spindle includes at least one inner stop element that abuts against said inner races in one axial direction, and other outer stop elements are provided that abut against said inner races in the other axial direction, such that said inner races are fixed on said spindle in both axial directions;

the ends of said spindle comprise adapting portions to receive crank arms, and said crank arms abut against said outer stop elements.

12. A bicycle with two crank arms and attached pedals in which:

said crank arms are connected to a spindle arranged rotatably in a bottom bracket;

said bottom bracket comprises an outer bracket portion and at least two cartridge bearings, each including inner and outer races; the inner races of said cartridge bearings are fit onto said spindle and the outer races are fit into said outer bracket portion; said spindle includes at least one inner stop element which abuts against said inner races in one axial direction, and there are outer stop elements provided which abut against said inner races in the other axial direction, such that said inner races are fixed on said spindle in both axial directions; the ends of said spindle comprise adapting portions to receive said crank arms; said crank arms abut against said outer stop elements.

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